Academia Sinica Grid Computing Certification Authority (ASGCCA)

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Outline

- Introduction
- Procedural Security
- Physical Security
- Technical Security
- Contact Information
- Related Information

Introduction

- The ASGCCA is established and managed by Academia Sinica Computing Centre in Taiwan and has been running since July 2002.
- It provides X.509 certificate to support the secure environment in grid computing.

Procedural Security

- End Entity and Certificate Type
- Identification and Authentication
- Certificate Request
- Certificate Revocation
- Records Archival

End Entity and Certificate Type

- End Entities:
  - Users of Academia Sinica Computing Centre
  - Users of Domestic/International Grid-based Application/Projects
- Certificate Type
  - User Certificate

    C=TW, O=AS, OU=CC, CN=Yuan Tein Horng / emailAddress=yth@beta.wsl.sinica.edu.tw
  - Host Certificate

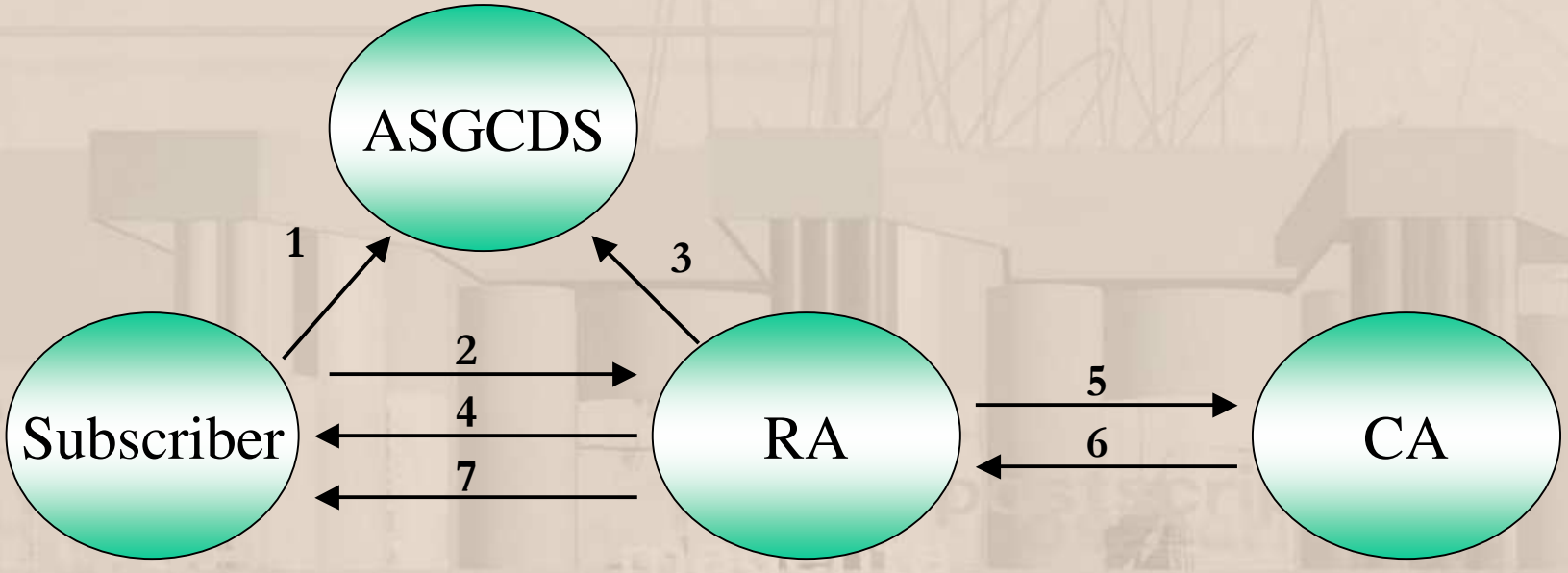
    C=TW, O=AS, OU=CC, CN=beta.wsl.sinica.edu.tw
  - Service Certificate

    C=TW, O=AS, OU=CC, CN=FTP/beta.wsl.sinica.edu.tw

Identification and Authentication

- User certificate:
  - Subscriber must be already registered at the Academia Sinica Grid Computing Directory Service (ASGCDS) as a user defined in end entities.
  - RA staff will check account registered on ASGCDS and contact subscriber personally.
- Host or service certificate:
  - Requests must be signed with a valid personal ASGCCA certificate
  - RA will check the FQDN of the host before issuing certificate

Certificate Request



1. Subscriber registers on ASGCDS
2. Subscriber requests certificate
3. RA checks the subscriber's identity on ASGCDS
4. RA contacts and confirms subscriber's identity personally
5. RA send certificate request to CA by signed e-mail
6. CA issues certificate
7. RA sends Email notice to subscriber and subscriber picks up new certificate

Certificate Revocation

- Circumstances for Revocation
  - The entity's private key is lost or suspected to be compromised.
  - The information in the entity's certificate is suspected to be inaccurate.
  - The entity requests for revocation.
  - The entity violates its obligations.

Procedure for Revocation Request

- The person requesting the revocation of certificate must authenticate himself in one of the following ways:
  - sending an email, signed by a valid and trusted certificate, to asgcca@grid.sinica.edu.tw, RA will contact subscriber for confirmation.
  - In the other cases, authentication is performed with the same procedure used to authenticate the identity of person.

Records Archival

- RA must record and archive
  - All requests (including application forms)
  - All confirmations
- CA must record and archive
  - All requests for certificates
  - All issued certificates
  - All requests for revocation
  - All issued CRLs
  - Login/Logout/Reboot of the issuing machine
- All archive data is stored and backed-up in safekeeping.
- The retention period for archives is three years.

Physical Security

- The CA issuing machine is
  - a dedicated machine
  - not connected to any network
  - located in a secure environment only accessible by CA administrator
  - configured to have private key and pass phrase stored and locked in a safe

Technical Security

- Key Generation
- Key Restriction
- Certificate Restriction
- CRL Policy

Key Generation

- Private key is generated by browsers on the users' machine.
- CA and RA will never generate private key on user's behalf.
- CA and RA have no access to the users' private key.

Key Restriction

- Key Length
  - ASGCCA private key is 2048 bits
  - User private key must have at least 1024 bits
  - Host private key must has at least 1024 bits
  - Service private key must has at least 1024 bits
- Pass phrase
  - The pass phrase of CA's private key is at least 15 characters
  - The pass phrase of end entity's private key is at minimum 8 characters.
  - Protecting the pass phrase from others

Certificate Restriction

- Certificate Lifetime for
  - ASGCCA certificate is 5 years
  - user certificate is one year
  - host certificate is one year
  - service certificates is one year
- User certificate should not be shared.

CRL Policy

- The lifetime of CRL is 30 days
- CRL is updated immediately after every revocation
- CRL is reissued 7 days before expiration even if there have been no revocations

Contact Information

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Related Information

- Homepage
  - http://ca.grid.sinica.edu.tw
- CP/CPS
  - Latest version: 1.1
  - OID: 1.3.6.1.4.1.5935.10.1.1.1
  - Follows the RFC 2527 structure
  - http://ca.grid.sinica.edu.tw/CPS/
- ASGCCA certificate
  - http://ca.grid.sinica.edu.tw/ASGCCA.crt
- CRL
  - http://ca.grid.sinica.edu.tw/CRL/

The End